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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,048	10/11/2001	Toshio Shintani	Q66510	7616

7590 12/20/2002

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EXAMINER

DINH, TUAN T

ART UNIT PAPER NUMBER

2827

DATE MAILED: 12/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/974,048

Applicant(s)SHINTANI ET AL. **Examiner**

Tuan T Dinh

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omote et al. (U. S. Patent 5,858,518) in view of Hashimoto et al. (U. S. Patent 6,225,569).

As to claims 1 and 4-5, Omote discloses a circuit board formed suspension substrate (1-figure 1, column 8, line 22) comprising:

a terminal portion (5, 6-figure 2, column 8, line 31), said terminal portion provided with a nickel plating layer (28-figure 2, column 8, lines 40-41);

wherein a thickness of said nickel plating layer (32-figure 13) is within a range of 1.0 to 4.0 μ m (column 10, lines 26-30),

wherein said terminal portion (5; 6) further includes a base layer (7), and a conductive layer (3, column 8, line 26) disposed between said base (7) and said nickel plating layers (28), wherein a thickness of said base layer (7) comprises polyimide resin (column 8, line 36).

Omote does not disclose a solder ball on the terminal portion connected with an external terminal formed in an external circuit.

Hashimoto shows a terminal portion (11) having a solder ball (33) connected with an external portion (32) formed in an external circuit (31) disclosed in figures 1-3.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a solder ball on the terminal portion connected with an external terminal formed in an external circuit as taught by Hashimoto to employ the circuit board of Omote in order to provide an electrical connection between two circuit boards.

As to claim 6, Omote discloses the circuit board (1) as shown in figure 4 wherein the thickness of the base layer (7) is 2.0 to 30.0 μ m (column 8, line 67).

As to claim 7, Omote discloses the thickness of the conductive layer is 2.0 to 15.0 μ m.

As to claim 8, Omote discloses the terminal portion (5; 6) further includes a cover layer (8; 26; or 31) disposed on said base layer (7) obvious having a thickness of 0.5 to 8.0 μ m.

3. Claims 2-3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omote et al. (U. S. Patent 5,858,518) in view of Hashimoto et al. (U. S. Patent 6,225,569) and Lubrano et al. (U. S. Patent 4,778,733).

Omote and Hashimoto disclose all of the limitations of the claimed invention, except for a soldering bump containing tin-silver-copper (tin-95-97%, copper-0-4%, and silver-0-4%).

Lubrano teaches a soldering bump containing tin-silver-copper (column 1, lines 28-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a soldering bump containing tin-silver-copper as taught by Lubrano to employ the solder bump of Omote and Hashimoto for a purpose which improves a melting point properties of solder attaching to a circuit board.

Response to Arguments

4. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Application/Control Number: 09/974,048
Art Unit: 2827


Page 5

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-1341 for regular communications and 703-305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

TD
December 9, 2002.


ALBERT W. PALADINI
PRIMARY EXAMINER